

APPENDIX E

BIOLOGICAL ASSESSMENT
FOR THE EAGLE BUTTE WEST LBA TRACT EIS

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E-1.0 INTRODUCTION

In 2001, RAG Coal West, Inc., operator of the Eagle Butte Mine in Campbell County, Wyoming filed an application with the Bureau of Land Management (BLM) to lease the federal coal reserves included in a maintenance coal tract under the regulations at 43 CFR 3425, Leasing on Application. Foundation Coal West, Inc. (FCW) purchased the Eagle Butte Mine from RAG Coal West, Inc., in August 2004. The environmental impacts of leasing this tract are being evaluated in the Eagle Butte West Coal Lease Application Environmental Impact Statement (EIS). The tract, referred to as the Eagle Butte West Lease by Application (LBA) Tract, and applicant mine are shown in Figures E-1 and E-2.

The purpose of this Biological Assessment is to provide information about the potential effects that leasing the Eagle Butte West LBA Tract would have on federally listed threatened or endangered (T&E) species. T&E species are managed under the authority of the Endangered Species Act (ESA) of 1973 (PL 93-205, as amended). The ESA requires Federal agencies to ensure that all actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any federally listed species or result in the destruction or adverse modification of their critical habitat. BLM does not authorize mining by issuing a lease for federal coal, but the impacts of mining the coal are considered at the leasing stage because it is a logical consequence of issuing a lease.

This Biological Assessment was prepared to disclose the possible effects to T&E species (plant and animal) that are known to be present or that may be present within the area influenced by the Proposed Action and the alternative to the Proposed Action being evaluated by the BLM. It was prepared in accordance with Section 7 of the ESA.

Biological Assessment objectives are:

1. To comply with the requirements of the ESA that actions of federal agencies not jeopardize or adversely modify critical habitat of federally listed species.
2. To provide a process and standard by which to ensure that threatened or endangered species receive full consideration in the decision making process.

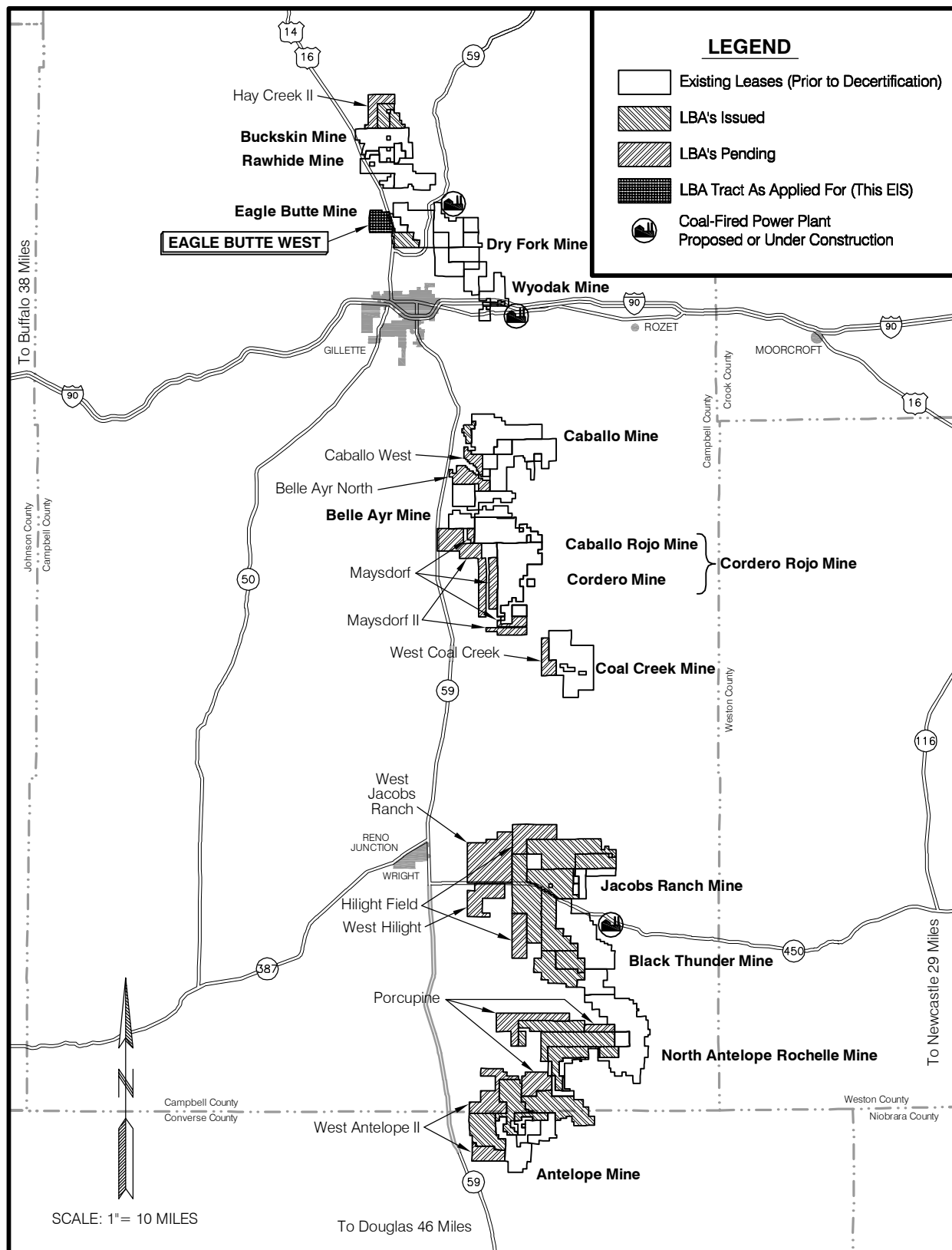


Figure E-1. General Location Map with Federal Coal Leases and LBA Tracts.

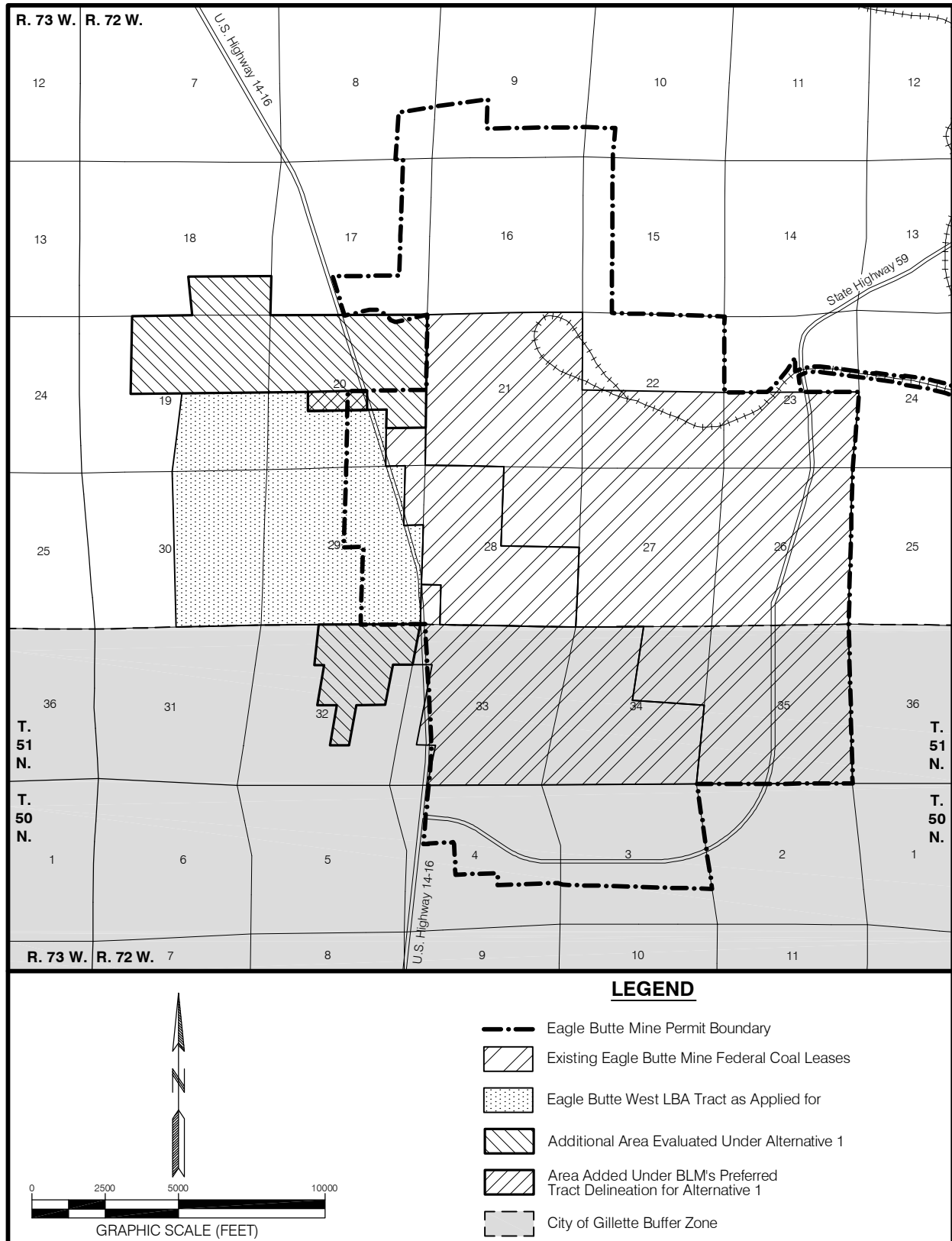


Figure E-2. Eagle Butte West LBA Tract Alternatives.

E-2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

E-2.1 The Proposed Action

On December 28, 2001, RAG Coal West, Inc. filed an application with the BLM to lease federal coal reserves in a tract located west of and immediately adjacent to the Eagle Butte Mine (Figure E-1). The tract, which was originally referred to as the Eagle Butte Mine West Extension LBA Tract, was assigned case file number WYW155132. BLM subsequently renamed the tract the Eagle Butte West LBA Tract and RAG submitted a modification to the application to the BLM, effective October 20, 2003, which decreased the size of the lease area and increased the coal volume. In August 2004, RAG Coal West, Inc. finalized the sale of the Eagle Butte Mine to Foundation Coal West, Inc. (FCW), a directly held subsidiary of Foundation Coal Holdings, Inc.

Under the Proposed Action for the Eagle Butte West LBA Tract, the tract as applied for by FCW would be offered for lease at a sealed-bid, competitive lease sale. The boundaries of the tract would be consistent with the tract configuration proposed in the Eagle Butte West LBA Tract lease application (Figure E-2). The Proposed Action assumes that FCW will be the successful bidder on the Eagle Butte West LBA Tract if it is offered for sale.

The legal description of the proposed Eagle Butte West LBA Tract coal lease lands as applied for by FCW under the Proposed Action is as follows:

T.51N., R.72W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 19: Lots 13, 14, 19, and 20;	187.79
Section 20: Lots 10(S½), 11(S½), and 12 through 15;	201.74
Section 29: Lots 1 (W½), 2 through 7, 8(W½ and SE¼), and 9 through 16;	635.45
Section 30: Lots 5, 6, 11 through 14, 19, and 20;	372.66
Total Acreage:	<u>1,397.64</u>

The coal estate underlying this tract described above is owned by the federal government and administered by the BLM. The surface estate of the tract is owned by FCW.

The tract as applied for includes approximately 1,397.64 mineable acres. It is assumed that an area larger than the tract would have to be disturbed in order to recover all of the coal in the tract. The disturbances outside of the tract would be due to activities like overstripping, matching undisturbed topography, and construction of flood control and sediment control structures.

Under the Proposed Action for the Eagle Butte West LBA Tract, if a decision is made to hold a competitive lease sale and if there is a successful bidder at that

sale, a lease would be issued for the tract of federal coal as applied for. The tract offered for lease would be subject to standard and special lease stipulations developed for the Wyoming Powder River Basin (PRB). The stipulations that would be attached to a lease for the Eagle Butte West LBA Tract are listed in Appendix D of the Eagle Butte West Coal Lease Application EIS. The following stipulation relating to T&E species is one of the special stipulations developed for the Wyoming PRB:

THREATENED, ENDANGERED, CANDIDATE, or OTHER SPECIAL STATUS PLANT and ANIMAL SPECIES - The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq., or that have other special status. The Authorized Officer may recommend modifications to exploration and development proposals to further conservation and management objectives or to avoid activity that will contribute to a need to list such species or their habitat or to comply with any biological opinion issued by the Fish and Wildlife Service for the Proposed Action. The Authorized Officer will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act. The Authorized Officer may require modifications to, or disapprove a proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species, or result in the destruction or adverse modification of designated or proposed critical habitat.

The lessee shall comply with instructions from the Authorized Officer of the surface managing agency (BLM, if the surface is private) for ground disturbing activities associated with coal exploration on federal coal leases prior to approval of a mining and reclamation permit or outside an approved mining and reclamation permit area. The lessee shall comply with instructions from the Authorized Officer of the Office of Surface Mining Reclamation and Enforcement, or his designated representative, for all ground disturbing activities taking place within an approved mining and reclamation permit area or associated with such a permit.

The coal mining unsuitability criteria listed in the federal coal management regulations (43 CFR 3461) have been applied to high to moderate coal development potential lands in the Wyoming PRB (see Section E-3.0 for further discussion). As discussed in Chapter 1, Section 1.5 of the Eagle Butte West Coal Lease Application EIS, the coal underlying U.S. Highway 14-16, its right-of-way (ROW), and a buffer zone that extends 100 feet on either side of the ROW is considered unsuitable for mining at this time under Unsuitability Criterion Number 3. An exception under criterion 3, specified in the Surface Mining Control and Reclamation Act (SMCRA), would allow surface coal mining in the ROW and buffer zone for a public road if the regulatory authority (or the appropriate public road authority designated by the regulatory authority) allows the public road to be relocated or closed after providing public notice

and opportunity for a public hearing and finding in writing that the interests of the affected public and landowners will be protected (30 CFR 761.11).

FCW and the Wyoming Department of Transportation (WYDOT), the designated public road authority in Wyoming, are working on a plan to relocate U.S. Highway 14-16, which would allow recovery of the coal underlying the highway, its ROW, and the buffer zone. If the road relocation is approved, the exception would be applicable and the unsuitability determination for the coal underlying U.S. Highway 14-16, its ROW, and the associated buffer zone could be reconsidered. (See Section 3.15 of the EIS for additional discussion of the proposed highway relocation.)

Although the coal within Highway 14-16, its ROW and the associated buffer zone is currently determined to be unsuitable for mining, it is included in the tract to allow maximum recovery of all the mineable coal adjacent to the highway ROW and associated buffer zone and to comply with the coal leasing regulations, which do not allow leasing of less than 10-acre aliquot parts. If a lease is issued for this tract, a stipulation will be attached to the lease stating that no mining operations may be conducted in the portion of the lease within the ROW and buffer zone for U.S. Highway 14-16 unless approval is obtained from the appropriate authority to move the highway.

FCW estimates that about 228 million tons of coal could be recovered from the Eagle Butte West LBA Tract under the Proposed Action if Highway 14-16 is moved. If the highway is not moved, FCW estimates that approximately 203 million tons of coal could be recovered from the tract.

Under the Proposed Action, it is assumed that the LBA tract would be developed as a maintenance lease to extend the life of the adjacent existing Eagle Butte Mine. As a result, under the Proposed Action, the coal included in the tract would be mined by existing employees using existing facilities and roads.

E-2.2 Alternatives to the Proposed Action

E-2.2.1 Alternative 1

Under Alternative 1 for the Eagle Butte West LBA Tract, BLM would reconfigure the tract, hold a competitive coal lease sale for the lands included in the reconfigured tract, and issue a lease to the successful bidder. Alternative 1, holding a competitive coal lease sale for a modified tract, is the BLM's preferred alternative.

In evaluating the Eagle Butte West coal lease application, BLM identified a study area, shown in Figure E-2. The BLM study area includes the tract as applied for and unleased federal coal adjacent to the northern and southern

edges of the tract as applied for. Under this alternative, BLM could add some or all of the additional area evaluated under this alternative (shown in Figure E-2) to the tract as applied for or BLM could reduce the size of the tract as applied for. The tract as modified by BLM would be subject to standard and special lease stipulations developed for the PRB and this tract if it is offered for sale, as discussed above. Alternative 1 for the Eagle Butte West LBA Tract assumes that FCW would be the successful bidder on the tract if a lease sale is held and that the tract would be developed as a maintenance lease to extend the life of the adjacent Eagle Butte Mine. Other assumptions are the same as for the Proposed Action.

BLM evaluated the potential that adding some or all of the adjacent lands shown in Figure E-2 would provide for more efficient recovery of the federal coal, increase competitive interest in the tract, and/or reduce the potential that some of the potentially mineable federal coal in this area would be bypassed in the future if it is not included in the Eagle Butte West LBA Tract. Based on this evaluation, BLM made a decision to add approximately 30 acres to the northeast corner of the tract to allow for more efficient recovery of the federal coal. The lands that BLM would add to the tract under the preferred tract configuration are:

T.51N., R.72W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 20: Lot 10(NW $\frac{1}{4}$), and Lot 11(N $\frac{1}{2}$);	30.13

The area added under BLM's preferred tract configuration is shown in Figure E-2. The coal estate underlying the above described lands that BLM is proposing to add to the Eagle Butte West LBA Tract is owned by the federal government and administered by the BLM. The surface estate on these lands is owned by FCW.

The portion of U.S. Highway 14-16 that is located in the area that would be added to the tract under the BLM's preferred tract configuration would also be considered unsuitable for mining under Unsuitability Criterion Number 3, as discussed above.

E-2.2.2 Alternative 2

Under Alternative 2, the No Action Alternative, the application to lease the coal included in the Eagle Butte West LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would not affect permitted mining activities and employment on the existing leases at Eagle Butte Mine and would not preclude an application to lease the federal coal included in the Eagle Butte West LBA Tract in the future. No additional surface of the Eagle Butte West LBA Tract would be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

E-3.0 CONSULTATION TO DATE

The location of the existing Eagle Butte Mine coal leases, the existing approved mine permit area, and the BLM study area for the Eagle Butte West LBA Tract (the tract as applied for and the additional area evaluated by BLM under Alternative 1) are shown in Figure E-2.

The Eagle Butte Mine and Eagle Butte West LBA Tract are included in the area determined to be “acceptable for further consideration for leasing” as part of the coal screening process. The coal screening process is a four part process that includes application of the coal unsuitability criteria, which are defined in 43 CFR 3461.5. BLM has applied these coal screens to federal coal lands in Campbell County several times, starting in the early 1980s. Most recently, in 1993, BLM began the process of reapplying these screens to federal coal lands in Campbell, Converse, and Sheridan Counties. The results of this analysis were included as Appendix D of the 2001 *Approved Resource Management Plan for Public Lands Administered by the BLM Buffalo Field Office* (BLM 2001), which can be viewed on the Wyoming BLM website at <http://www.blm.gov/wy/st/en/info/NEPA/documents.html>. Consultation with the U.S. Fish and Wildlife Service (USFWS) occurred in conjunction with the unsuitability findings under criterion 9 (Critical Habitat for Threatened or Endangered Plant and Animal Species), criterion 11 (Bald or Golden Eagle Nests), criterion 12 (Bald and Golden Eagle Roost and Concentration Areas), criterion 13 (Falcon Nesting Site(s) and Buffer Zone(s)), and criterion 14 (Habitat for Migratory Bird Species).

Appendix B of the Eagle Butte West Coal Lease Application EIS summarizes the unsuitability criteria, describes the general findings for the screening analyses discussed above, and presents a validation of these findings for the Eagle Butte West LBA Tract based on the current information.

Consultation with USFWS has previously been completed for the area included within the Eagle Butte Mine’s existing approved mining permit area, shown in Figure E-2, as part of the mining and reclamation plan approval process. This process began when the mine was initially permitted in 1976.

A letter dated April 7, 2005, from Brian Kelly, USFWS, Cheyenne, Wyoming, to Bill Boger, FCW, Gillette, Wyoming, documents approval of the current updated Raptor and Migratory Birds of High Federal Interest (MBHFI) Monitoring and Mitigation Plan for the Eagle Butte Mine (USFWS 2005a).

USFWS provided BLM a list of the T&E species that may be present in the Eagle Butte West coal lease project area in a memorandum letter from Brian T. Kelly, USFWS, Wyoming Field Office, Cheyenne, Wyoming, to Nancy Doelger, BLM, Casper Field Office, Casper, Wyoming dated July 26, 2005 (USFWS 2005b). The following list of federally listed threatened or endangered species

that may be present in the Eagle Butte West coal lease application project area was provided:

Bald eagle (*Haliaeetus leucocephalus*): Threatened

Black-footed ferret (*Mustela nigripes*): Endangered

Ute ladies'-tresses (*Spiranthes diluvialis*): Threatened

E-4.0 SPECIES HABITAT AND OCCURRENCE AND EFFECTS OF THE PROPOSED PROJECT

The Eagle Butte Mine began producing coal in 1976. Wildlife monitoring has been conducted annually for the mine since 1986. This wildlife monitoring was designed to meet the Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD), Wyoming Game and Fish Department (WGFD), and federal requirements for annual monitoring and reporting of wildlife activity on coal mining areas. Detailed procedures and site-specific requirements have been carried out as approved by WGFD and USFWS. The monitoring program was conducted in accordance with Appendix B of WDEQ/LQD Coal Rules and Regulations. Because the areas covered in the wildlife surveys included the mine's permit area and a large perimeter around the permit boundary, the entire Eagle Butte West LBA Tract has been included in baseline inventories and annual wildlife surveys conducted for the Eagle Butte Mine since wildlife studies began in the early 1970s.

The approved Eagle Butte Mine Permit 428 Term T5 (FCW 2005) includes monitoring and mitigation measures for the Eagle Butte Mine that are required by SMCRA and Wyoming State Law. If the Eagle Butte West LBA Tract is acquired by FCW, these required monitoring and mitigation measures would be extended to cover operations on the LBA tract when the Eagle Butte Mine's mining permit is amended to include the tract. This amended permit would have to be approved before mining operations could take place on the tract. These monitoring and mitigation measures are considered to be part of the Proposed Action and Alternative 1 during the leasing process because they are regulatory requirements.

Background information on T&E species in the vicinity of the Eagle Butte West LBA Tract was drawn from several sources, including wildlife survey reports submitted by the Eagle Butte Mine to the WDEQ/LQD from 1974 through 2005, the Final EIS for the West Hay Creek Coal Lease Application (BLM 2004), a Wyoming Natural Diversity Database search (University of Wyoming 2001), and WGFD and USFWS records and contacts in 2004 and 2005. In addition, the Eagle Butte West LBA Tract wildlife study area falls within the wildlife monitoring areas for the nearby Buckskin and Rawhide Mines (Figure E-1).

Site-specific data for a substantial portion of the tract as applied for and the additional area evaluated under Alternative 1 were obtained from several sources, including WDEQ/LQD permit applications and annual wildlife reports for the Eagle Butte Mine and other nearby coal mines. Baseline wildlife studies were conducted by Thunderbird Wildlife Consulting, Inc., (TWC) expressly for the Eagle Butte West LBA Tract beginning in April of 2004 and continuing through December of 2004. Figure E-3 depicts TWC's T&E animal species survey areas for the Eagle Butte West LBA Tract.

The topography within the vicinity of the LBA tract is generally level to gently rolling, dissected by locally shallow gullies and the broader meandering floodplain of Little Rawhide Creek, an intermittent stream. Unmined lands surrounding the LBA tract are characterized by low rolling hills with a prominent ridgeline immediately to the west. Lands affected by surface mining, both ongoing and reclaimed, dominate the landscape adjacent to the LBA tract's eastern edge. Elevations range from approximately 4,240 to 4,560 feet above sea level.

Predominant wildlife habitat types classified on the LBA tract and adjacent area correspond with the major plant communities defined during the vegetation baseline study and consist primarily of seeded grassland (agricultural pasture), grassland, and sagebrush/grassland. Other habitats present in limited extent include bottomland, trees, and open water. Networks of road, pipeline, tank battery, and well-pad disturbance areas associated with oil and gas development overlay much of the study area.

Little Rawhide Creek passes through the eastern portion of the LBA tract, flowing from south to north. Its tributary, Prong Draw, passes through the central portion of the tract, flowing from southwest to northeast (Figure E-3). Under natural conditions, Little Rawhide Creek is classified as an intermittent stream and its tributaries, including Prong Draw, are all ephemeral streams. Essentially all water courses in the study area are currently receiving discharge water from coal bed natural gas (CBNG) development and, as a result, the frequency and duration of streamflow events have been increased. At least seven distinct, in-channel impoundments are located on the Eagle Butte West LBA Tract as applied for and three others are located on the additional area evaluated under Alternative 1. Streamflow is now more persistent and these shallow impoundments along Little Rawhide Creek and Prong Draw are seldom completely dry, resulting in an increase in habitat for waterfowl, shorebirds, and aquatic species.

FCW's approved mining plan allows disturbance of a portion of the Little Rawhide Creek channel. Approximately four miles of the stream is currently diverted from its natural channel to facilitate mining within the existing Eagle Butte Mine permit area. Diversion No. 6 (Figure E-3) channel was constructed in 1981. FCW would propose another diversion of Little Rawhide Creek if they acquire a lease for the Eagle Butte West LBA Tract.

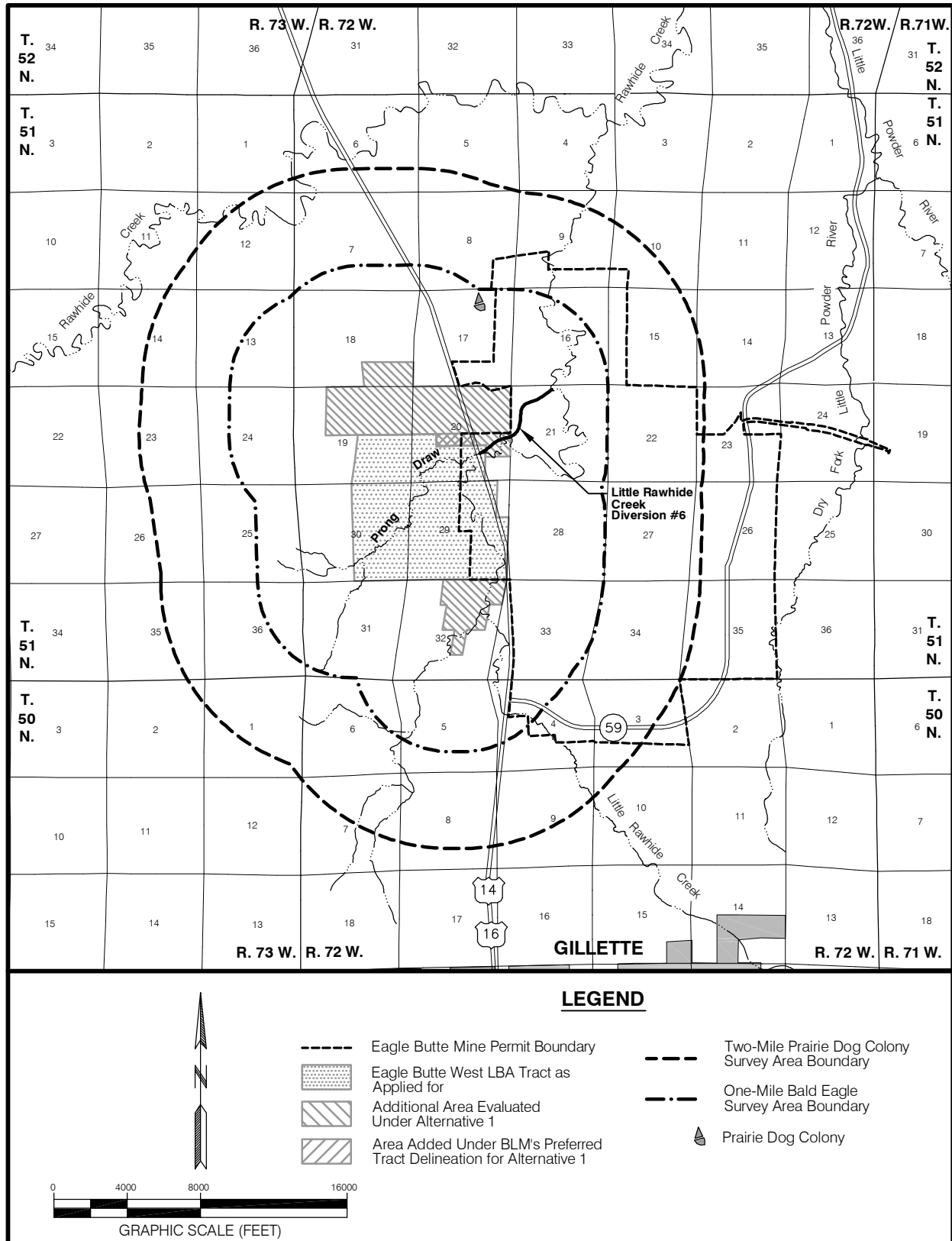


Figure E-3. T&E Animal Species Survey Area for the Eagle Butte Mine and the Eagle Butte West LBA Tract.

A preliminary wetlands inventory, based on USFWS National Wetlands Inventory (NWI) mapping and vegetation mapping in the field, was conducted in 2004. The wetland analysis area includes the BLM study area for the Eagle Butte West LBA Tract (the tract as applied for and the additional area evaluated under Alternative 1) and a ¼-mile disturbance buffer around the tract sufficient to mine and reclaim the tract as a part of the existing Eagle Butte Mine operation. A formal wetland delineation has been confirmed by the U.S. Army Corps of Engineers (COE) for the portion of the wetland analysis area (947.94 acres) that is within the current Eagle Butte Mine permit area. Wetland areas previously mapped by the USFWS NWI have been recently altered due to CBNG-related water production within and upstream of the wetland analysis area. The NWI maps were consulted prior to the initiation of the preliminary wetlands field survey; however, the boundaries of the existing potential jurisdictional wetlands vary to a greater or lesser extent from the boundaries shown on the NWI maps. Due to the ephemeral nature of CBNG dewatering activities, the boundaries, and therefore wetland areas, are likewise ephemeral. A formal jurisdictional wetland survey for the Eagle Butte West LBA Tract has not yet been completed due to the fact that the current field conditions may not be representative of the field conditions in the future. A formal jurisdictional wetland delineation survey would be conducted and submitted to the COE for verification as part of the mining and reclamation permit process, if the tract is leased.

Within the wetland analysis area (4,172 acres), the preliminary inventory identified a total of 50.4 acres of Waters of the U.S., including a total of 49.8 acres of jurisdictional Waters of the U.S. Approximately 37.5 of those acres are jurisdictional wetlands. Identified jurisdictional wetlands occur along the water courses of Little Rawhide Creek and its tributaries. The 12.3 acres of jurisdictional other Waters of the U.S. that did not qualify as jurisdictional wetlands consist primarily of the open water that is held within the linear upland drainage channels and in-channel impoundments and intermittent pools. There is an additional 0.5 acre of non-jurisdictional Waters of the U.S. in the wetland analysis area that consists of small isolated areas of open water where water produced from nearby CBNG development wells has ponded. The identified potential jurisdictional wetlands include Riverine-Emergent Marsh and Riverine-Wet Meadow.

Jurisdictional wetlands located in the Eagle Butte West LBA Tract that are destroyed by mining operations would be replaced in accordance with the requirements of Section 404 of the Clean Water Act, as determined by COE. The replaced wetlands may not duplicate the exact function and landscape features of the pre-mine wetlands. COE considers the type and function of each jurisdictional wetland that will be impacted and may require restoration of additional acres if the type and function of the restored wetlands will not completely replace the type and function of the original wetland. Replacement of non-jurisdictional and functional wetlands may be required by the surface land owner and/or WDEQ/LQD. WDEQ/LQD allows and sometimes requires

mitigation of non-jurisdictional wetlands affected by mining, depending on the values associated with the wetland features.

Within the BLM study area, there is no “critical” habitat designated by USFWS for T&E species. The following discussion describes species’ habitat requirements and their occurrence in the area of the Eagle Butte West LBA Tract and evaluates the potential environmental effects of implementing the Proposed Action or Alternative 1 on federal T&E species.

E-4.1 Threatened Species

E-4.1.1 Bald eagle (*Haliaeetus leucocephalus*)

On February 14, 1978, the bald eagle was listed as endangered in all of the coterminous United States except Minnesota, Wisconsin, Michigan, Oregon, and Washington, where it was classified as threatened (43 F.R. 6233). The USFWS reclassified the bald eagle from endangered to threatened throughout its range in the lower 48 states on July 12, 1995 (60 F.R. 36000). The bald eagle was proposed for delisting on July 6, 1999 (64 F.R. 36454). On July 9, 2007, the USFWS published a notice in the *Federal Register* removing the bald eagle in the lower 48 states from the list of endangered and threatened wildlife. The effective date for this action will be August 8, 2007. According to the *Federal Register* notice, the protections provided to the bald eagle under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act will continue to remain in place after delisting and USFWS has proposed a draft post-listing monitoring plan to detect the failure of the bald eagle to sustain itself without the protective measures of the ESA.

Biology and Habitat Requirements: Adult bald eagles establish life-long pair bonds and nest primarily in remote areas free of disturbance, in large trees that are near rivers, lakes, marshes, or other wetland areas. In Wyoming, this species builds large nests in the crowns of large mature trees such as cottonwoods or pines. Typically, there are alternate nests within or in close proximity to the nest stand. Snags and open-canopied trees near the nest site and foraging areas provide favorable perch sites. This species is a common breeding resident in some areas of Wyoming (Luce et al. 1999 and USFWS 2005b).

Food availability is probably the single most important determining factor for bald eagle distribution and abundance (Steenhof 1976). Fish and waterfowl are the primary sources of food. Big game and livestock carrion, as well as rodents (e.g., ground squirrels, prairie dogs, etc.) also can be important dietary components where these resources are available (Ehrlich et al. 1988). Bald eagles are opportunistic foragers. They prefer to forage in areas with the least human disturbance (USFWS 1978, McGarigal et al. 1991).

Bald eagles that have open water or alternate food sources near their nesting territories may stay for the winter; other eagles migrate southward to areas with available prey. During migration and in winter, eagles often concentrate on locally abundant food resources and tend to roost communally at night. Communal roosts usually are located in large mature trees, usually in secluded locations that offer protection from harsh weather. Large, live trees in sheltered areas provide a favorable thermal environment and help minimize the energy stress encountered by wintering eagles. Communal roosting also may facilitate food finding (Steenhof 1976) and pair bonding. Bald eagles often return to use the same nest and winter roost year after year (USFWS 2005b). Freedom from human disturbance is also important in communal roost site selection (Steenhof et al. 1980, U.S. Bureau of Reclamation 1981, USFWS 1986, Buehler et al. 1991). Continued human disturbance of a night roost may cause eagles to abandon an area (Hansen et al. 1981, Keister 1981). The proximity of night roosts to the other habitats required by wintering eagles, such as hunting perches and feeding sites, is important (Steenhof et al. 1980). Roosts may be several miles from feeding sites. The absence of a suitable roost may limit the use of otherwise suitable habitat.

Existing Environment: Bald eagles are relatively common winter residents and migrants in northeastern Wyoming's PRB. Qualified biologists with TWC conducted searches for bald eagle winter roosts and potential nesting habitat within the BLM study area for the LBA tract (the LBA tract as applied for and the additional area evaluated under Alternative 1) and a one-mile perimeter during 2004 (Figure E-3). No bald eagles, roosts, or potential nesting habitat were observed at that time. Over time, individual eagles have infrequently been seen during winter foraging within the one-mile survey area, or perched in cottonwood trees in residential windbreaks located in Sections 20 and 29, T.51N., R.72W., or in the cottonwood trees around an impoundment located in the NE¼ of Section 32, T.51N., R.72W. However, no winter roost sites have been documented in the vicinity of the survey area during nearly 20 years of wildlife monitoring in that area for the Eagle Butte Mine, as well as the nearby Buckskin and Rawhide Mines. Additionally, there are no unique or concentrated sources of carrion or prey (including sheep ranching operations) in the survey area, so foraging bald eagles would not be attracted to the area in great numbers. A few isolated bald eagle nesting attempts have been recorded in the general region, but none have occurred within several miles of the survey area.

Effects of the Proposed Project: **Mining the federal coal lease included in the Eagle Butte West LBA Tract, if the tract is leased under the Proposed Action or Alternative 1, may affect, but is not likely to adversely affect bald eagles.** No suitable roosting habitat, known nest sites, or concentrated prey or carrion sources for bald eagles are present on the BLM study area for the Eagle Butte West LBA Tract and surrounding survey area. Use of the trees that are present in and around the BLM study area for the tract by eagles has been infrequent.

Disturbance to nesting eagles can cause nest failure, nest abandonment, and unsuccessful fledging of young; however, no bald eagle nests are known to be present in the area and potential nesting habitat is not present. Bald eagle foraging habitat would be lost on the tract during mining and before final reclamation; however, the Eagle Butte Mine and Eagle Butte West LBA Tract areas do not provide any consistent, reliable or concentrated food sources for eagles. The loss of any potential foraging habitat would be short-term. Foraging habitat that is lost during mining would be replaced as reclamation continues on already mined out areas. Eagles may alter foraging patterns as they fly around areas of active mining activity.

The potential for bald eagles to collide with or be electrocuted by electric power lines on the mine site would be minimal due to use of raptor-safe power lines, which is required under SMCRA (30 CFR 816.97). Use of roads accessing Eagle Butte Mine by mine-related traffic would continue when the Eagle Butte West LBA Tract is mined, which would perpetuate the potential for vehicle-wildlife collisions and the associated roadside carcasses. This could result in bald eagle foraging along roads in this area, which would perpetuate the potential for road kills of foraging bald eagles to occur.

Cumulative Effects: Mineral development, including CBNG development, conventional oil and gas development, and surface coal mining, is a leading cause of habitat loss within the PRB. CBNG development in and adjacent to the LBA tract is extensive and has been ongoing since the late 1980s. Surface coal mining has been ongoing at the Eagle Butte Mine for 30 years.

E-4.1.2 Ute ladies'-tresses (*Spiranthes diluvialis*)

Ute ladies'-tresses, a member of the orchid family, was listed as threatened on January 17, 1992 due to a variety of factors, including habitat loss and modification, hydrological modifications of existing and potential habitat areas, and invasion of exotic plant species. At the time of listing, Ute ladies'-tresses was only known from north-central Colorado, northern and south-central Utah, and southeastern Nevada. As of September 2005, it had also been found in western Nebraska, southeastern Wyoming, southwestern Montana, and north-central Washington, while new populations had been documented in northwestern Colorado and northern Utah (Fertig, et al. 2005). USFWS has determined that a petition to remove the Ute ladies'-tresses orchid from federal protection under the ESA provides substantial biological information to indicate that removal may be warranted. The petition was received from the Central Utah Water Conservancy District (USFWS 2004).

Biology and Habitat Requirements: Ute ladies'-tresses is a perennial, terrestrial orchid with erect, glandular-pubescent stems 8 to 20 inches tall arising from tuberous-thickened roots. This species typically flowers from late July through August. The flowers are white or ivory and clustered into a spike at the top of the stem; however, depending on location and climatic conditions,

it may bloom in early July or still be in flower as late as early October (USFWS 2005b). Plants probably do not flower every year and may remain dormant below ground during drought years. The total known population of this species is currently estimated to be 60,000 individuals (USFWS 2004). Occurrences range in size from one plant to a few hundred individuals.

Ute ladies'-tresses has been found in a variety of habitats, including moist meadows associated with perennial stream terraces, floodplain and oxbows, seasonally flooded river terraces, subirrigated or spring-fed abandoned stream channels and valleys, and lakeshores. They have also been discovered along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands. The elevation range of known occurrences is from 720-1,830 feet in Washington to 7,000 feet in northern Utah (Fertig, et al. 2005). Soils where the orchid has been found typically range from fine silt/sand to gravels and cobbles, as well as to highly organic and peaty soil types. The Ute ladies'-tresses orchid is not found in heavy or tight clay soils or in extremely saline or alkaline soils and seems intolerant of shade. Small scattered groups are found primarily in areas where vegetation is relatively open (USFWS 2005b). The Ute ladies'-tresses orchid is commonly associated with horsetail, milkweed, verbena, blue-eyed grass, reedgrass, goldenrod, and arrowgrass.

Populations are often dynamic and "move" within a watershed as disturbances create new habitat or succession eliminates old habitat (Fertig and Beauvais 1999). The orchid is well adapted to disturbances from stream movement and is tolerant of other disturbances, such as grazing, that are common to grassland riparian habitats (USFWS 1995). Ute ladies'-tresses colonize early successional riparian habitats such as point bars, sand bars, and low-lying gravelly, sandy, or cobbly edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season. The orchid establishes in heavily disturbed sites, such as revegetated gravel pits, heavily grazed riparian edges, and along well-traveled foot trails on old berms (USFWS 1995).

This species is known from four occurrences in Wyoming, within Converse, Goshen, Laramie, and Niobrara Counties, all discovered between 1993 and 1997 (Fertig and Beauvais 1999). No occurrences have been recorded in Campbell County.

Existing Environment: Areas of suitable habitat within the BLM study area for the Eagle Butte West LBA Tract (the tract as applied for and the additional area evaluated under Alternative 1) were surveyed by Habitat Management, Inc. in August and September 2004 and in August 2005. Topographical and wetland delineation maps for the study area were reviewed to identify all significant drainages and potential habitat that may contain the orchid.

Suitable habitat was traversed on foot during the time of actual flowering of the known population, and it involved walking entire lengths of the drainages documenting locations of potential habitat and searching for this species.

No individuals of the Ute ladies'-tresses orchid were located during the 2004 and 2005 surveys. Most of the land within the BLM study area for the Eagle Butte West LBA Tract is not potential Ute ladies'-tresses habitat. This includes highly disturbed or modified sites, upland habitat types, and sites inundated by standing water. Potentially suitable habitat within the study area is very limited and is mostly found along the CBNG-impacted bottomlands of Little Rawhide Creek and its tributaries. Suitable habitat factors included areas within and immediately adjacent to wet meadows, stream channels and floodplains, less steep stream banks, light soil texture and well drained soils having close lateral or vertical distance (within approximately 18 inches) to perennial water source during the flowering period, lack of plant competition, lack of general soil alkalinity/salinity, and current or historical management practices that did not promote overgrazing and extensive use of riparian areas. The quality of potential habitat in the survey area is poor for a number of key reasons:

- The soils tend to be heavy and trend from moderately to very saline/sodic. The saline/sodic areas typically have monocultural stands of inland saltgrass (*Distichlis spicata stricta*) or foxtail barley (*Hordeum jubatum*).
- Wet meadow habitat types are heavily colonized by aggressive rhizomatous graminoid plant species, including common spikerush (*Eleocharis palustris*), prairie cordgrass (*Spartina pectinata*), and western wheatgrass (*Pascopyron smithii*). These narrow riparian strips located between emergent aquatic vegetation and dry upland prairie are probably too dense and too shaded by tall vegetation to provide suitable habitat.
- Surface discharge of groundwater associated with CBNG development, within and upstream of the study area has altered historic shallow groundwater and soil moisture conditions along all water courses, causing major shifts in plant community distributions.
- Livestock grazing, particularly during the wetter times of the year, has impacted the quality of riparian areas.

Effects of the Proposed Project: Mining the federal coal included in the Eagle Butte West LBA Tract, if the tract is leased under the Proposed Action or Alternative 1, may affect, but is not likely to adversely affect Ute ladies'-tresses. There is limited potential suitable habitat for this species on the tract along the CBNG-impacted bottomlands of Little Rawhide Creek and its tributaries. However, the quality of the potential suitable habitat is

poor. Outside of the narrow riparian strips located along these impacted watercourses, potential suitable habitat is rare or non-existent in the surveyed area. Multiple surveys of the existing suitable habitat at the Eagle Butte Mine and other mines in this area have not found any Ute ladies'-tresses. Because of the ability of this species to persist below ground or above ground without flowering, single season surveys that meet the current USFWS survey guidelines may not detect populations. If undetected populations are present, they could be lost to surface disturbing activities.

Cumulative Effects: Alterations of stream morphology and hydrology are believed to have extirpated Ute ladies'-tresses from most of its historical range (USFWS 2002). Disturbance and reclamation of streams by surface coal mining may alter stream morphology and hydrology. The large quantities of water produced with CBNG development and discharged on the surface may also alter stream morphology and hydrology.

E-4.2 Endangered Species

E-4.2.1 Black-footed ferret (*Mustela nigripes*)

Biology and Habitat Requirements: The black-footed ferret is a federally-listed endangered species. The black-footed ferret historically occurred throughout Texas, Oklahoma, New Mexico, Arizona, Utah, Kansas, North and South Dakota, Montana, Wyoming, Nebraska, and Colorado. The last known wild population of black-footed ferrets was discovered in Meeteetse, Wyoming in 1981. This population became decimated by canine distemper so the remaining individuals were captured and raised in protective captive breeding facilities in an effort to prevent the species' extinction (Clark and Stromberg 1987). In the early 1990s, captive-bred black-footed ferrets were released in the Shirley Basin in the first reintroduction of the species in North America. Recent survey efforts in the Shirley Basin have confirmed a self-sustaining black-footed ferret population at this former re-introduction site. The Forest Service has established a Black-Footed Ferret Habitat Management Area in the Thunder Basin National Grassland, located southeast of Wright, Wyoming, where they plan to reintroduce ferrets (USDA-FS 2002).

The black-footed ferret, a nocturnally active mammal, depends almost entirely upon the prairie dog for its survival. Prairie dogs are the main food source of black-footed ferrets, and few ferrets have been collected away from prairie dog colonies. Ferrets may be present within colonies of white-tailed or black-tailed prairie dogs. The USFWS has determined that, at a minimum, potential habitat for the black-footed ferret must include a single white-tailed prairie dog colony of greater than 200 acres, or a complex of smaller colonies within a 4.3 mile (seven kilometer) radius circle totaling 200 acres (USFWS 1989). Minimum colony size of black-tailed prairie dogs for ferrets is 80 acres (USFWS 1989).

The decline in ferret populations has been attributed to the reduction in the extensive prairie dog colonies that historically existed in the western United States. The three major impacts that have influenced black-tailed prairie dog populations are the initial conversion of prairie grasslands to cropland in the eastern portion of its range from approximately the 1880s through 1920s; large-scale control efforts conducted from approximately 1918 through 1972, when an Executive Order was issued banning the use of compound 1080; and the introduction of sylvatic plague into North American ecosystems in 1908 (USFWS 2000). In Wyoming, this species historically occurred east of the Rocky Mountain foothills and may have occupied millions of acres (USFWS 2000). The Bureau of Sport Fisheries and Wildlife estimated that there were approximately 49,000 remaining acres of black-tailed prairie dog colonies in Wyoming in 1961. USFWS recently estimated that about 125,000 acres of black-tailed prairie dog occupied habitat exists in Wyoming (USFWS 2000).

Existing Environment: The Eagle Butte West LBA Tract is within the historical range of the black-footed ferret, although no black-footed ferrets are presently known to occur in northeastern Wyoming. During the 1980s, WGFD, in cooperation with other agencies, conducted searches for black-footed ferrets in Wyoming in the places they were most likely to be found, but these searches were not successful (Martin Grenier, personal communication, 10/14/2003). In a February 2, 2004 letter to interested parties, the USFWS declared that black-footed ferret surveys are no longer necessary in black-tailed prairie dog colonies within Wyoming.

TWC has mapped the current acreage of prairie dog colonies in the vicinity of the Eagle Butte Mine by walking the perimeters of colonies and delineating them on topographic maps. No black-tailed prairie dog colonies are currently present on the BLM study area for the Eagle Butte West LBA Tract (the tract as applied for and the additional area evaluated under Alternative 1). One small town (approximately one acre in size) is located a little less than one and one-half miles north of the northern edge of the tract as applied for and BLM's preferred tract configuration for the Eagle Butte West LBA Tract (Figure E-3). No evidence of ferrets has been recorded during general or specific ferret surveys conducted from 1976 through 2005 by wildlife consultants for the Eagle Butte Mine and other mines in this area.

Effects of the Proposed Project: **Mining the federal coal included in the Eagle Butte West LBA Tract, if a lease is issued under the Proposed Action or Alternative 1, would have no effect on black-footed ferrets.** No black-tailed prairie dog colonies are currently present on or within about one and one-half miles of the Eagle Butte West LBA Tract as applied for or BLM's preferred tract configuration under Alternative 1. The black-footed ferret is almost entirely dependent on the prairie dog for survival. The reductions in black-tailed prairie dog populations due to poisoning prior to 1972 and due to recent plague outbreaks have reduced the potential for black-footed ferret survival in northeastern Wyoming. Searches of the best remaining black-footed

ferret habitat in Wyoming conducted in the 1980s were not successful in finding any ferrets. General wildlife surveys and specific ferret surveys have been conducted for many years at the Eagle Butte Mine, and at other mines in this area. No black-footed ferrets have ever been observed during these surveys.

Cumulative Effects: Mineral development within black-tailed prairie dog colonies is a leading cause of ferret habitat loss in the PRB. Surface coal mining tends to have more intense impacts on fairly localized areas, while oil and gas development tends to be less intensive but spread over larger areas. Oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted. In reclaimed areas, vegetation cover may differ from undisturbed areas. In the case of surface coal mines, re-established vegetation would be dominated by species mandated in the reclamation seed mixtures (to be approved by WDEQ). The majority of the approved plant species are native to the area; however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats, particularly in the short-term, when species composition, shrub cover, and other environmental factors are likely to be different. Shifts in habitat composition or distribution following reclamation could increase or decrease potential habitat for prairie dogs and associated habitat for black-footed ferrets. However, black-tailed prairie dogs have been recorded invading and establishing towns on reclaimed coal mined lands in northeastern Wyoming (IR 2005).

Potential ferret habitat is also affected by other impacts to prairie dog populations. Plague can infect and eliminate entire prairie dog colonies. Poisoning and recreational prairie dog shooting may locally reduce prairie dog populations, but seldom completely eliminate colonies.

E-5.0 SUMMARY OF DETERMINATIONS

Table E-1 summarizes the determinations for federally listed T&E species in the area of the Eagle Butte West LBA Tract that may result from implementing the Proposed Action or Alternative 1.

Table E-1. Effects Evaluation of Federal T&E Species in the Area of the Eagle Butte West LBA Tract.

Status	Species Common Name	Potential Effects
Threatened:	Bald eagle	May affect ¹
	Ute ladies'-tresses	May affect ¹
Endangered:	Black-footed ferret	No effect ¹

¹ Not likely to adversely affect individuals or populations.

E-6.0 REGULATORY REQUIREMENTS AND MITIGATION

The issuance of a Federal coal lease grants the lessee the exclusive rights to mine the coal, subject to the terms and conditions of the lease. Lease ownership is necessary for mining federal coal, but lease ownership does not authorize mining operations. Surface coal mining operations are regulated in accordance with the requirements of the Surface Mining Control and Reclamation Act of 1977 (SMCRA) and Wyoming State regulations. SMCRA gives the Office of Surface Mining Reclamation and Enforcement (OSM) primary responsibility to administer programs that regulate surface coal mining operations and the surface effects of underground coal mining operations. Pursuant to Section 503 of SMCRA, the WDEQ developed, and in November 1980 the Secretary of the Interior approved, a permanent program authorizing WDEQ to regulate surface coal mining operations and surface effects of underground mining on nonfederal lands within the State of Wyoming. In January 1987, pursuant to Section 523(c) of SMCRA, WDEQ entered into a cooperative agreement with the Secretary of the Interior authorizing WDEQ to regulate surface coal mining operations and surface effects of underground mining on federal lands within the state. In order to get approval of this cooperative agreement, the state had to demonstrate that the state laws and regulations are no less stringent than, meet the minimum requirements of, and include all applicable provisions of SMCRA.

If the Eagle Butte West LBA Tract is leased, it would be a maintenance lease for the existing Eagle Butte Mine, which currently has both an approved Mineral Leasing Act of 1920 (MLA) mining plan and an approved Wyoming State mining and reclamation permit. In the case of maintenance leases, such as the Eagle Butte West LBA Tract, the existing MLA mining plan and State mining and reclamation plan must be amended to include newly leased areas before those areas can be mined. In order to amend the existing MLA mining plan and state mining and reclamation permit, the company would be required to submit a detailed permit application package to WDEQ before starting surface coal mining operations on any newly acquired lease. WDEQ/LQD would review the permit application package to insure the permit application complies with the permitting requirements and the coal mining operation will meet the performance standards of the approved Wyoming program. If the permit application package does comply, WDEQ would issue the applicant an amended permit that would allow the permittee to extend coal mining operations onto the newly acquired lease.

Protection of fish, wildlife, and related environmental values is required under SMCRA regulations at 30 CFR 816.97, which state:

“No surface mining activity shall be conducted which is likely to jeopardize the continued existence of endangered or threatened species listed by the Secretary of which is likely to result in the destruction or adverse

modification of designated critical habitats of such species in violation of the Endangered Species Act of 1973, as amended.”

In addition to requiring the operator to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values, the regulations at 30 CFR 816.97 disallow any surface mining activity which is likely to jeopardize the continued existence of endangered or threatened species and require that the operator use the best technology currently available to minimize electrocution hazards to raptors; locate and operate haul and access roads to avoid or minimize impacts on important fish and wildlife species; and design fences, conveyors, and other potential barriers to permit passage of large mammals. Section 7 consultation would be required prior to approval of the mining and reclamation plan modification. Additional measures to ensure compliance with the ESA and SMCRA can be developed when the detailed mining plan, which identifies the actual location of the disturbance areas, how and when they would be disturbed, and how they would be reclaimed, is developed and reviewed for approval. At the leasing stage, a detailed mining and reclamation plan is not available for evaluation or development of appropriate mitigation measures specific to an actual proposal to mine.

The following is a partial list of measures related to federally-listed species that are required as part of the mining and reclamation permits:

- avoiding bald eagle disturbance;
- restoring bald eagle foraging areas disturbed by mining;
- using raptor safe power lines; and
- surveying for Ute ladies'-tresses if habitat is present.

E-7.0 CUMULATIVE IMPACTS

Existing habitat-disturbing activities in the PRB include surface coal mining; conventional oil and gas and CBNG development; uranium mining; sand and gravel, and scoria mining; ranching; agriculture; road, railroad, and power plant construction and operation; recreational activities; and rural and urban housing development. Mining, construction and agricultural activities, and urban development tend to have more intense impacts on fairly localized areas, while ranching, recreational activities, and oil and gas development tend to be less intensive but spread over larger areas. Oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted. The net area of energy disturbance in the Wyoming PRB has been increasing. In the short term, this means a reduction in the available habitat for T&E plant and wildlife species. In the long term, habitat is being and will continue to be restored as reclamation proceeds.

BLM is in the process of completing a regional technical study of current and proposed or potential development activity in the PRB to help the agency evaluate the impacts of coal development in the PRB. The *Powder River Basin*

Coal Review consists of three tasks: Task 1 updates the BLM's 1996 status check for coal development in the PRB, Task 2 develops a forecast of reasonably foreseeable development in the PRB through the year 2020, and Task 3 predicts cumulative impacts that would be expected to occur as a result of the projected development. The information about existing development in the following paragraphs is taken from the *Powder River Basin Coal Review* Task 2 report (BLM 2005) and BLM lease records. The completed PRB Coal Review reports can be accessed at the BLM Wyoming website at http://www.blm.gov/wy/st/en/programs/energy/Coal_Resources/PRB_Coal/prbdocs.html.

The project area for Tasks 1 and 2 of the PRB Coal Review encompasses over eight million acres and includes all of Campbell, Sheridan, and Johnson Counties and the northern portion of Converse County in northeastern Wyoming.

Oil and gas exploration and production have been ongoing in the PRB for more than 100 years. Conventional (non CBNG) oil and gas fields are, for the most part, concentrated in the central and southern parts of the structural basin. Development of the CBNG resources from the coal beds is a more recent occurrence, with CBNG production in the Wyoming PRB starting in the late 1980s. As of 2003, an estimated 187,761 acres had been disturbed in the coal review project area as a result of oil and gas development activities, but approximately 115,045 acres of that disturbance has been reclaimed. This includes conventional oil and gas and CBNG wells and associated facilities and major transportation pipelines.

BLM estimates that the existing federal coal leases in the Wyoming PRB include approximately 121,185 acres. The currently pending federal coal LBA tracts (including the Eagle Butte West LBA Tract) include approximately 35,352 additional acres. The majority of the coal in the areas permitted for surface coal mining is federal, but some state and private leases are included within some of the existing mine permit areas. All of the current and proposed federal coal leases are concentrated near the outcrop of the Wyodak coal bed, which is located in eastern Campbell County and the extreme northeastern edge of Converse County. As of 2003, the baseline year for the PRB Coal Review, the surface coal mining operations along the Wyodak outcrop had disturbed approximately 68,794 acres. Approximately 24,097 of those acres of disturbance are occupied by "permanent" mine facilities, such as roads, buildings, coal handling facilities, etc., which are not available for reclamation until after coal mining operations end. Of the remaining 44,697 acres of disturbance available for reclamation, approximately 21,238 acres had been reclaimed.

The *Powder River Basin Coal Review* identified an estimated 4,891 additional acres of coal-related development disturbance (i.e., coal-fired power plants, railroads, and coal technology projects) as of 2003.

The estimated total development-related disturbance in the Wyoming PRB in 2003 was 264,704 acres. In addition to the coal and oil and gas development discussed above, this total includes other types of development disturbance, such as reservoirs and industrial fabrication firms, as well as public and private infrastructure, such as highways and roads, government buildings, and residential and commercial real estate development. It should be noted that some of these disturbances overlap one another. In such cases, the disturbance acreage is counted separately under each category, but is not counted twice in determining the total area of disturbance.

Cumulative effects would also occur to T&E plant and wildlife resources as a result of indirect impacts. One factor is the potential import and spread of noxious weeds around roads and facilities. Noxious weeds have the ability to displace native vegetation and hinder reclamation efforts. Control of noxious weeds is addressed in surface coal mining and reclamation plans. If weed mitigation and preventative procedures are applied to all construction and reclamation practices, the impact of noxious weeds on T&E plants and wildlife would be minimized.

In reclaimed areas, vegetation cover often differs from undisturbed areas. In the case of surface coal mines, re-established vegetation would be dominated by species mandated in the reclamation seed mixtures (to be approved by WDEQ). The majority of the species in the approved reclamation seed mixtures are native to the area; however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats. In the short-term in particular, species composition, shrub cover, and other environmental factors are likely to differ from pre-disturbance vegetation communities and habitats. Establishment of noxious weeds and alteration of vegetation in reclaimed areas has the potential to alter T&E plant and wildlife habitat composition and distribution.

Potential adverse effects to listed and proposed species that have occurred and would continue to occur as a result of existing and potential future activities in the PRB would include direct loss of habitat, indirect loss of habitat due to human and equipment disturbance, habitat fragmentation, displacement of bald eagle prey species and the resultant change in bald eagle foraging, and mortality caused by equipment activities, motor vehicle collisions, power line collisions, and power line electrocution. The existing mines have developed mitigation procedures, as required by SMCRA (at 30 CFR 816.97) and Wyoming State regulations, to protect T&E species. These procedural requirements would be extended to include mining operations on the Eagle Butte West LBA Tract, if it is leased as proposed and after required detailed plans to mine the coal and reclaim the mined-out areas are developed and approved.

E-8.0 CREDENTIALS OF SURVEY PERSONNEL**Thunderbird Wildlife Consulting of Gillette, Wyoming**Gwyn McKee

Ms. McKee obtained a Master of Science degree in Wildlife Ecology from the University of Missouri-Columbia. She has accumulated more than 18 years of professional experience, with the last eleven in Wyoming. Ms. McKee has skills that include planning and conducting surveys for a variety of terrestrial and aquatic species, summarizing data, and preparing technical reports for private, state, and federal agencies. Ms. McKee is considered qualified by all state and federal agencies to conduct T&E and other wildlife surveys within the region. Those qualifications include surveys for mountain plovers and their habitat, and certification by the USFWS to conduct black-footed ferret surveys.

Kort M. Clayton

Mr. Clayton earned a Masters of Science degree in Biology from the University of Saskatchewan. He has been professionally involved with wildlife issues in the Northern Great Plains for over 12 years. Since 1998, Mr. Clayton has focused on wildlife inventories, clearances, impact analysis, mitigation, and applied research related to energy developments in the PRB of Wyoming and Montana. Those experiences include surveys for most vertebrate taxa in the region, sage-grouse research, raptor mitigation projects, and clearance surveys for several federally listed species.

Habitat Management, Inc. of Gillette, WyomingWayne Erickson

Mr. Erickson received his B.S. in Forest Biology and Botany from Colorado State University and has accumulated over 30 years of field experience in vegetation and rare plant surveys.

Mr. Erickson's T&E plant survey experience includes:

- T&E plant species survey, Ancho Mine, York Canyon Complex, Colfax County, NM (1995);
- T&E plant species survey, Gauchapin-Brackett Mine, York Canyon Complex, Colfax County, NM (1996);
- T&E plant species survey, Buckskin Mine, Campbell County, WY (1999);
- T&E plant species survey, Eagle Butte Mine, Campbell County, WY (2003);
- T&E plant species survey, Eagle Butte Mine, Campbell County, WY (2004);
- T&E plant species survey, Bar W Ranch, Carrizozo, Lincoln County, NM (2004); and
- T&E plant species survey, ERM/Enogex Pipeline (90 miles in Western Colorado and Eastern Utah), 2005.

Mr. Erickson's familiarity with *Spiranthes diluvialis* includes:

- Observation of flowering populations in Jefferson County, Colorado, 1998-present;
- Conducting *Spiranthes diluvialis* survey, Home Depot Development, Northglenn, CO (1998);
- Conducting *Spiranthes diluvialis* survey, Buckskin Mine, Hay Creek Amendment, Campbell County, WY (1999 & 2004);
- Conducting *Spiranthes diluvialis* survey, Eagle Butte Mine, Eagle Butte West Amendment, Campbell County, WY (2004-2005);
- Conducting *Spiranthes diluvialis* survey, School Creek Mine, School Creek Amendment, Campbell County, WY (2005); and
- Conducting *Spiranthes diluvialis* survey, ERM/Enogex Pipeline (90 miles in Western Colorado and Eastern Utah), 2005.

Richard Bonine

Mr. Bonine received his B.S. in Agronomy with concentration in range and plant science from Kansas State University and has accumulated over 14 years of field experience in vegetation surveys.

Mr. Bonine's familiarity with *Spiranthes diluvialis* includes:

- Study of several taxonomic texts to gain understanding of the identifying characteristics and habitat of the species.
- Research of known locations of the species in Wyoming.
- Conducting *Spiranthes diluvialis* survey, Eagle Butte Mine, Eagle Butte West Amendment, Campbell County, WY (2004-2005).

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